A4. Protect and Restore Floodplain Function

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The Challenge

Floodplains play a vital, often unrecognized role in the health of the Puget Sound ecosystems and watershed. Floodplains support a variety of key ecological functions including nutrient storage, filtering nutrients, protecting communities from flooding and providing critical habitat and sustenance for a diverse array of terrestrial and aquatic life in Puget Sound.

For decades, increased floodplain development and encroachment in the Puget Sound have contributed to harming fish and wildlife populations in the region, reduced water quality and costly flood disasters.

In an effort to protect and restore floodplains in Puget Sound, PSP and other organizations have developed a series of five overarching strategies. The first set of strategies are aimed at protection of intact floodplains. The second addresses the stewardship of floodplains located in agricultural lands. The third set deals with restoration strategies in region. The fourth group of strategies is aimed at supporting the local water regime and complying with existing floodplain regulations and the fifth group of strategies addresses climate change and floodplain management.

The five groups of strategies are organized into more specific sub-strategies with corresponding near term actions (NTAs). Sub-strategies and NTAs provide specific, actionable directives for federal, state, local agencies and other organizations to define floodplains and floodplain function within the Puget Sound environment based on the floodplain characterization study expected to be completed in 2012. Many of the sub-strategies and NTAs build off the information the characterization will identify along with the ongoing work to define Puget Sound floodplains and their functions.

Relationship to Recovery Targets

The Partnership defines a functioning, resilient ecosystem to include freshwater floodplains that support natural processes and deliver ecological services to keep people and property safe during flooding. The ecosystem should also support fisheries production and provide water filtration and ground water recharge. Given their vital role in maintaining the health and functioning of the Puget Sound, it is important that intact floodplains be protected and development on existing floodplains be limited. As such, the Partnership set several recovery targets for floodplains in the Puget Sound that it aims to achieve by 2012. They are:

- 15 percent of degraded floodplain areas are restored or floodplain projects to achieve that outcome are underway across Puget Sound; and
- No additional loss of floodplain function in any Puget Sound watershed relative to a 2011 baseline.

The Partnership will work collaboratively with partners over the next two years to develop and refine indicators to map floodplain extent and current condition. The indicators will measure connectivity, condition and flood storage capacity and will include identification of the most important floodplain areas on which to focus recovery and protection efforts (e.g., the entire 100-year floodplain or a smaller, more dynamic and ecologically critical portion of the floodplain) and be documented in a work plan. The two-year work plan will also include a complete version of Ecology's Sound-wide mapping[1] of channel migration zones and modifications to river-floodplain interactions due to shoreline alteration as well as development of a land cover-based measure of riparian and floodplain condition. The indicators and the work plan will provide valuable information and decision-making tools and help the Partnership, local jurisdictions and other agencies work toward the floodplain recovery target.

A4.1 Protect and maintain intact and functional floodplain functions (i.e., flood storage, channel migration, and habitat forming processes) by focusing growth away from functional floodplains.

Floodplain lands provide a complex, dynamic physical and biological system that reduces the number and severity of floods, helping handle storm water runoff and filters and improves water quality. When portions of floodplains are preserved or restored to their natural state, they provide many benefits to both human and natural systems. Currently, 71 percent of Washington's floodplains are poorly functioning and very little – just under 10 percent–of the floodplains and wetlands associated with lowland alluvial rivers remain. In Puget Sound, protection of the remaining habitat functions of floodplains and restoration of lost functions is noted as a high priority in many listed species recovery plans, and the Action Agenda calls for several near-term actions supporting these outcomes.[2]

A4.1.1 Identify, assess and revise regulatory policies (e.g., exemption) allowing development in floodplains, including areas behind levees, areas protected with bank stabilization, and unprotected areas. Ensure regulatory policies and their implementation protect floodplain function.

Preliminary work has already been completed identifying federal, state, and local programs that impact floodplains in the Puget Sound. Near term work will seek to identify and prioritize where policies could be modified to support floodplain recovery in Puget Sound and work towards achieving the recovery target.

Near Term Actions

NTA A4.1.1.1 By the second quarter of 2012, using the results in the July 2010 "Floodplain Management: A Synthesis of Issues Affecting Recovery of Puget Sound" report, the PSP will

[1] To be completed in 2013.

[2] Puget Sound Partnership. July 2010. Floodplain Management: A Synthesis of Issues Affecting Recovery in Puget Sound. Available at: http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

synthesis, identify, and draft an action plan for the programs and target programmatic recommendations for legislative change, rule amendments, administrative changes, needed to achieve the floodplains pressure reduction target.

A4.1.2 Use floodplain assessments and prioritizations, watershed assessments, watershed plans, and regional ecosystem protection standards to define areas that should be protected.

Complete and up-to-date information is foundational to achieving floodplain recovery. The strategies, sub-strategies and NTAs associated with floodplain protection and recovery assume that decision makers will have access to reliable data on floodplain location and condition. This sub-strategy and the corresponding NTA are the highest priority floodplain action for the Action Agenda. Prior to the near term action, PSP will convene a group comprised of representatives from TNC, NWIFC, PSP, FEMA, DOE, NOAA, USGS, and UW ESP to define floodplain and floodplain function, and frequently flooded areas.

Near Term Actions

NTA A4.1.2.1 The PSP will convene a group to identify floodplains areas and then prioritize most important for protection, restoration, development, compatible agriculture or other compatible and non-compatible uses by 2013. The outputs from this effort will result in development of watershed specific strategies.

NTA A4.1.2.2 [Who?] will convene a group Identify and prioritize lands that support floodplain functions that could be protected through property acquisition or transfer of development rights (TDR).

A4.1.3 Align agency plans, programs, regulations and policies to better protect and restore floodplain functions.

Following the completion of the characterization work described in sub-strategy 4.1.2, specific implementation actions will be identified for agency plans, programs, regulations and policies to support protection of prioritized floodplains.

Near Term Actions

NTA A4.1.3.1 The PSP will convene a multi-agency group to bring the results of the prioritization work to identify implementation steps by 2013.

A4.1.4 Provide assistance to local jurisdictions with implementation and enforcement of floodplain protection and restoration policies and regulations.

The Federal Emergency Management Agency (FEMA) implements the National Flood Insurance Program (NFIP). NFIP issues flood insurance to homeowners and greatly influences the type and extent of development in floodplains. In late 2008, the National Marine Fisheries Service (NMFS)

issued a Biological Opinion (BiOp) finding that the NFIP jeopardizes the existence of several Puget Sound species listed under the Endangered Species Act (ESA). NMFS has identified seven actions for FEMA that would bring the NFIP into compliance with the ESA, the third of which calls for FEMA to modify its implementation of the NFIP minimum criteria to prevent and/or minimize the degradation of channel and floodplain habitat. NMFS has set a deadline of September 22, 2011 for work by FEMA and 122 communities in Puget Sound to implement this action.[3] The BiOp and the work it outlines for FEMA and Puget Sound communities has critical implications for the floodplain recovery target. NTA 4.1.5.1 is designed to assist will full implementation of the BiOp.

Near Term Actions

NTA A4.1.5.1 FEMA and NOAA technical assistance team will work with other local, state and federal governments to implement BiOP and provide tools and mechanisms to promote consistency with other regulations by 1Q 2012.

NTA A4.1.5.2 FEMA and NOAA will develop effectiveness monitoring framework for NFIP program review by 4Q 2013.

A4.1.6 Ensure that a modern scientific understanding is applied to local floodplain management, through the update of Frequently Flood Areas and State engagement in GMA-required Frequently Flooded Area regulations and SMP updates.

Performance Objectives for Ongoing Programs

The Growth Management Act (GMA) mandates that local jurisdictions complete, update, or revise Comprehensive Plans, Shoreline Management Plans (SMPs), Critical Areas Ordinances and other development regulations and functional plans to manage growth, protect rural character and the environment. The GMA requires that counties and cities to include the best available science in developing policies and development regulations to protect the functions and values of critical areas, including floodplains.[4] Cities and counties with "shorelines of the state" must prepare and adopt a SMP. SMPs are based on state laws and rules but are also tailored to the specific geographic, economic and environmental needs of the community. Many counties and cities in the Puget Sound are in the process of revising their Comprehensive Plans and SMPs.

Floodplains are also referred to as “frequently flooded areas”. Frequently flooded areas are lands in the floodplain subject to a 1 percent or greater chance of flooding in any given year, including, but not limited to, streams, rivers, lakes, coastal areas, and wetlands.[5]

Near Term Actions

[3] http://www.psp.wa.gov/downloads/LC2010/111910/05e_FEMA_BiOP_Memo.pdf
[4] http://www.commerce.wa.gov/site/418/default.aspx
[5] http://www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&alias=CTED&lang=en&ItemID=976&MId=944&wversion=Staging

NTA A4.1.6.1 State agencies will engage with local government representatives about how they manage Frequently Flooded Areas (CAO update) including, advocate for use of Frequently Flooded Areas and provide technical support and oversight of local government use of updated flood information by 2013.

A4.1.7 Improve and increase outreach and education regarding land development practices, flood hazards, and floodplain function.

Near Term Actions

NTA A4.1.7.1 The PSP will include the risk of developing in floodplains and benefits/services of preserving floodplain function in its ongoing outreach by 2012.

A4.1.8 Locate new and replacement public infrastructure (e.g., bridges, roads, rails, treatment plants) outside of floodplains or ensure that design of new or replacement infrastructure allows and enhances floodplain function. Repairs to infrastructure that cannot be relocated should incorporate the least intrusive repair possible.

Near Term Actions

NTA A4.1.8.1 By 2013, [Who?] will convene transportation agencies and utilities to identify public infrastructure that has the greatest impact on floodplain function by watershed. [Who] will inform the appropriate party about high impact infrastructure and provide technical input as appropriate.

A4.2 Support long-term protection and stewardship of agricultural lands, working farms, and forests to help maintain existing ecosystem function, sustain quality of life, improve the viability of rural communities, and maintain long-term restoration and flood protection options.

In the Puget Sound, there are two primary types of development that occur on floodplains, urban and agricultural. Farmlands are frequently found on floodplains or deltas because of the abundance of rich, fertile soil. Agricultural land use and development can significantly alter the functionality of floodplains. In their rating of existing floodplain function in Puget Sound the NMFS found that agriculture-dominated water resource inventory areas (25 percent or greater agricultural use) had "poor" or "poor-fair" conditions.[6] Farmers also experience the direct social and economic costs of floods when they occur. In

[6] Smith, C.J. 2005. Salmon Habitat Limiting Factors in Washington State. Prepared for the Washington State Conservation Commission, Olympia, Washington. In http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

the wake of flooding in 1990, over 600 cattle died in Snohomish and King Counties and 1,200 dairy cattle had to be evacuated from Fir Island in Skagit County. In 2003, over 300 farm animals died in flooding.[7]

The GMA requires counties to designate agricultural lands of long-term commercial significance, depending on soils and other considerations. Many of these lands are located in floodplains, but once designated, the law requires that the land is used for farming and not other uses making floodplain protection or conservation in agricultural lands difficult. However, a more holistic approach to floodplain management, better data on location and function of floodplains and the use of tools like financial incentives can all help maintain stewardship of agricultural lands while also protecting floodplains.

A4.2.1 Use, coordinate, expand and promote financial incentives, including flood/riparian easements, that allow working agricultural lands to stay viable, reduce land development and support floodplain functions.

Continued farming in floodplains is essential to ensure the economic viability of the Puget Sound agricultural industry and to ensure the availability of local food sources. This sub-strategy is focused on looking for win-win opportunities for farmers and for protection of floodplains.

Near Term Actions

NTA A4.2.1.1 [Who and by When] Purchase development rights in areas adjacent to and behind levees and in areas where there is an active floodplain.

NTA A4.2.1.2 The Ruckelshaus center, NRCS, and PSP will work to secure NRCS funding for Puget Sound flood easements in the next farm bill and identify/design a pilot by 2013.

A4.2.1.1 Support pilot projects that demonstrate ecosystem services markets associated with flood hazard prevention and agricultural lands in floodplains.

Near Term Actions

No specific near-term actions are identified for this sub-strategy other than the activities of ongoing programs.

A4.2.1.2 Promote floodplain compatible agriculture.

Near Term Actions

NTA A4.2.1.2.1 The local integrating organizations will convene conservation districts, NCRS, lead entities for the WRIAs, and use the definition of floodplain function to identify floodplain compatible agriculture.

[7] http://www.psp.wa.gov/downloads/LC2010/072010/03b_Floodplain_Management_Report%20Judge%20Final-July%202010.pdf

A4.2.2 Develop and promote (CREP and EQUIP) economic and regulatory incentives to promote multi-benefit ecosystem function of agricultural lands.

Near Term Actions

NTA A4.2.1.1 WA Dept of Agriculture will assess the disincentives for reestablishing habitat land on agricultural lands by 2013.

A4.3 Implement and maintain priority ecosystem restoration projects for floodplains, tidal and non-tidal.

The target identified for Puget Sound recovery calls for a 15 percent restoration of floodplains. This strategy identifies the work that needs to occur over the next two years to realize the recovery target by 2020.

A4.3.1 Restore and increase floodplain function on marginal agricultural lands.

A4.3.1.1 Support land swaps on marginal farm lands and priority floodplain function lands.

Near Term Actions

NTA A4.3.1.1.1 The conservation districts, agricultural community, watershed planning groups, and local jurisdictions will use the outputs from the characterization work to identify potential land swaps (i.e., county land use and conservation districts) and identify candidate areas to expand areas available for agriculture outside of priority floodplain areas by 2012.

A4.3.2 Develop and implement floodplain restoration pilot project program.

Near Term Actions

NTA A4.3.2.1 [Who is the lead?] will work with commerce, the agricultural community, and local jurisdictions, to develop five case studies that are illustrative of the benefits of restoration of floodplain function and use them as tools to promote and educate by 2012.

NTA A4.3.2.2 [Who] will work to identify Federal, State, Local, and private funding to develop a pilot program to fund projects that leverage the work and lessons learned from the case studies and the NTA 1.2 prioritization work by the fourth quarter of 2012.

A4.3.3 Identify programmatic changes to facilitate floodplain protection and restoration.

Near Term Actions

NTA A4.3.3.1 FEMA, USACE, and Ecology will collaborate to develop and enable cost-share mechanisms for floodplain-friendly modifications to flood protection infrastructure by 2012.

NTA A4.3.3.2 [Who should be the lead convener?] will convene PSP, FEMA, Ecology, USACE, and Local Governments to identify the policies and priorities of local and regional flood risk reduction and flood mitigation programs to foster multi-objective floodplain management and prioritize non-structural, ecosystem based approaches to protecting local communities by 2012.

A4.3.3.1 Improve monitoring of and information and data sharing regarding restoration and modification projects.

Near Term Actions

No specific near-term actions are identified for this sub-strategy other than the activities of ongoing programs.

A4.3.4 Revise federal policies (USACE and FEMA) to develop regionally-specific Puget Sound policies.

Near Term Actions

NTA A4.3.4.1 [Who] will convene the USACE, Ecology, DFW, and local levee owners to identify the barriers to implementing levee setbacks and work with key parties to address barriers by the fourth quarter of 2012.

NTA A4.3.4.2 The PSP will lead and participate in the development of new regional-based levee based vegetation standards by the first quarter of 2012.

A4.3.5 Develop new approach (USACE) to cost-benefit analysis that includes ecosystem services and longer term/larger scope analysis.

Near Term Actions

No specific near-term actions are identified for this sub-strategy other than the activities of ongoing programs.

A4.3.6 Support existing policies to maintain non-structural alternatives for flood hazard reduction and to convert structural to non-structural.

There are non-structural ways of enhancing flood protection, e.g., levee setback and preserving forest cover, that also have other ancillary benefits to the ecosystem. The purpose of this sub strategy is to advocate for and identify strategies non-structural alternatives.

Near Term Actions

NTA A4.3.6.1 In 2012, [Who] will convene the USACE, Ecology, DFW, and flood districts/watershed groups, as appropriate, to identify incentive mechanisms to participate and implement non-structural alternatives to flood hazard reduction.

A4.4 Protect and conserve a normative flow regime to support floodplain functions.

A4.4.1 Reform state water laws to be more protective of in-stream flows and to encourage conservation and implement stream flow protection and enhancement programs.

Near Term Actions

No specific near-term actions are identified for this sub-strategy other than the activities of ongoing programs.

A4.5 Incorporate climate change forecasts into floodplain protection and restoration strategies.

A4.5.1 Perform cost benefit analysis for structural versus nonstructural protection and restoration strategies.

Near Term Actions

No specific near-term actions are identified for this sub-strategy other than the activities of ongoing programs.

A4.5.2 Use findings from research studies on climate change impacts on floodplains in the Puget Sound to extrapolate risk factors pertinent to floodplains.

Near Term Actions

NTA A4.5.2.1 EPA will work with project implementers to document and publish findings by 2013.

A4.5.3 Work with Federal, State, and Local governments to integrate climate change risk factors in planning processes.

Near Term Actions

NTA A4.5.3.1 By 2012, a representative from Climate Impacts Group will be a member of the Science Panel.